

Supplementary Materials

Mode-Localized Accelerometer in the Nonlinear Duffing Regime with 75 ng Bias Instability and 95 ng/ $\sqrt{\text{Hz}}$ Noise floor

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Table I. Dimensions of the mode-localized accelerometer.

Parameter	Value
DETF length	600 μm
DETF width	6 μm
Lever length	2400 μm
Lever width	400 μm
Diameter of the coupler	530 μm
Proof mass	6.8mg
Area of the proof mass	73mm ²
Suspension beam length	700 μm
Suspension beam width	5 μm
Number of suspension beams	16

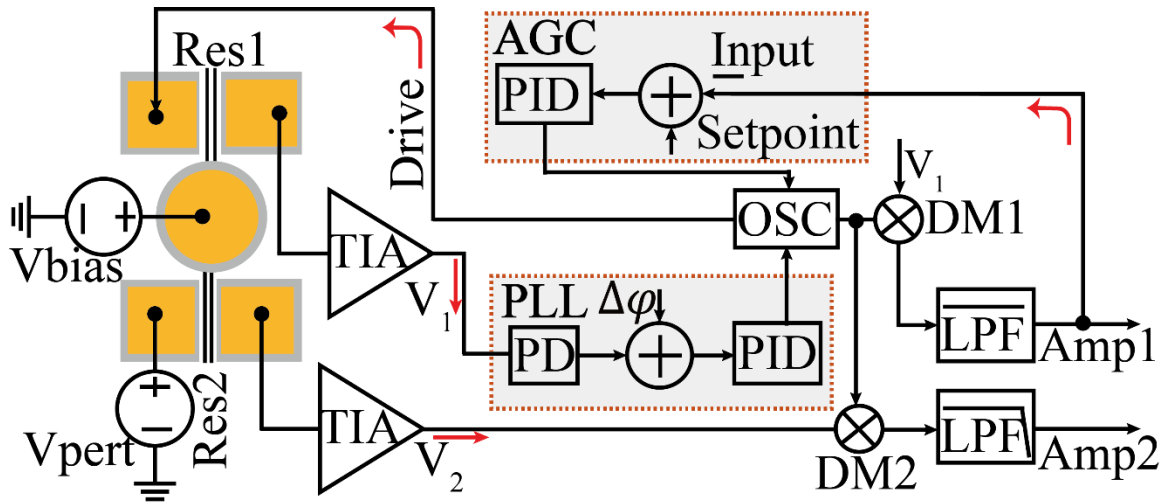


Fig. S1 The electrical test setup. TIA here indicates the transimpedance amplifier, PD the phase detector, PLL the phase-locked-loop, AGC the automatic gain control, OSC the digital oscillator, LPF the low-pass filter, DM the demodulator, and Amp the amplitude.

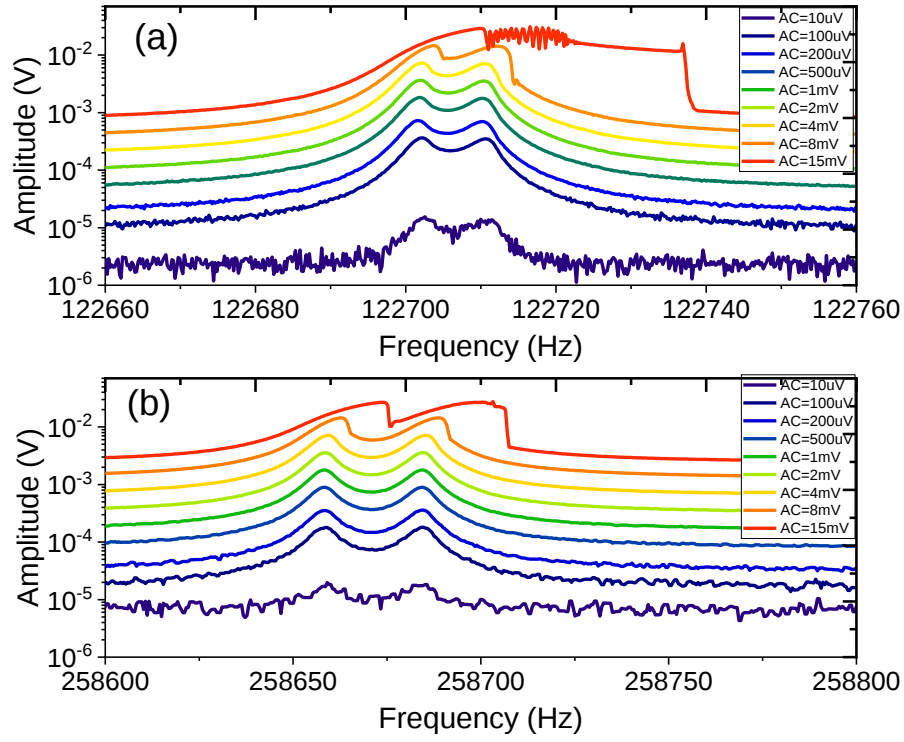


Fig. S2 Frequency responses of Res 2 (the secondary resonator that is not directly driven) at the lower-order (f) and higher-order (g) modes of interests with different drive AC signals, close to the veering point.

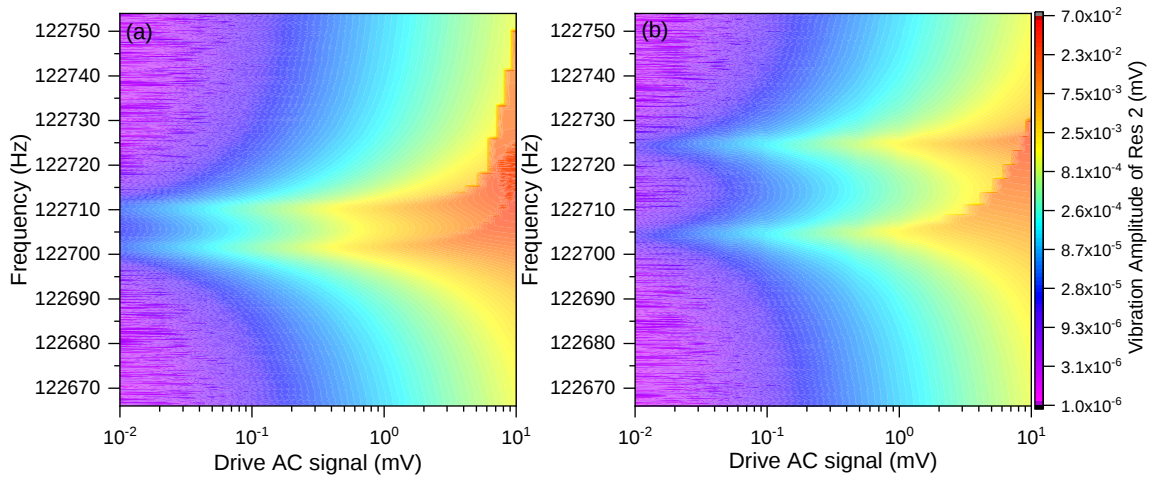


Fig. S3 Experimental measurement of the sweep-up amplitude-frequency responses of Res 2 with different drive AC values, with an initial condition of AR=1.1 (a) and AR=4.2 (b).